

Transmission Corridors Work Group

MEETING #3 (DECEMBER 8 & 9, 2021) SUMMARY

Opening

Rob Willis, Ross Strategic Facilitator, welcomed Transmission Corridors Work Group (TCWG) members to the session and requested all public participants join via the livestream. The objectives were to:

- Enhance TCWG understanding of the near-term challenges related to improving Washington state's existing transmission system (Day 1).
- Begin vetting a shared set of TCWG principles related to meeting transmission needs and constructing new or enhanced infrastructure (Day 2)

Kathleen Drew, Chair of Washington Energy Facility Site Evaluation Council (EFSEC), opened the meeting by thanking everyone for their participation during the last workgroup meeting. Drew highlighted efforts taking place to address siting and permitting to advance clean energy projects in Washington State, including the Low-Carbon Energy Project Siting Advisory Committee and Interagency Work Group. Additionally, Drew shared that Governor Inslee plans to propose a package of bills to promote clean energy projects, including a bill amending the EFSEC statute, which would (among other things) clarify that transmission projects can opt in to the EFSEC siting process. Drew further provided an overview of topics covered in previous TCWG meetings, including a description of the Washington state transmission system, CETA requirements, and different energy visions for the Northwest. Meetings have also included presentations from BPA, PUDs, independent owned utilities, and the renewable energy industry.

Following Drew's introduction, Willis provided an overview of focus areas and guided TCWG members through the agenda and planned discussions for the day.

Members in attendance are listed in [Appendix A](#).

TCWG Member Round Robin

Willis invited members to share comments and questions regarding Meeting #2 and other topics on their minds.

Ann Rendahl, Commissioner at Washington Utilities and Transportation Commission, opened the discussion, sharing about a Federal Energy Regulatory Commission (FERC) order that established a joint advisory task force, focused on transmission planning, generation interconnection, and cost allocation. Rendahl further shared that the task force reviews transmission applications, with 10 state commissioners serving on the task force for a 3-year period. The overall goal of the task force is to support efficient and cost-effective development of transmission that ensures communication between the state and federal regulators.

In response, members shared their appreciation for the context setting associated with understanding the bigger picture of transmission siting.

Challenges and Opportunities to Improving the Existing Transmission System

Presentation #1: BPA's Transmission Offerings and Study Process

Chris Jones, Supervisory Public Utilities Specialist with Bonneville Power Administration (BPA), shared an overview of BPA's Transmission Offerings and Study Process. Jones commented that BPA's process for evaluating and responding to transmission service requests mirrors FERC's tariff and offers two transmission service types: point-to-point and network integration transmission service. While point-to-point service is generally used for transmission from one point to another across BPA's main grid, network integration transmission service is only used for load service, allowing for the designation of multiple resources.

Jones shared that BPA offers firm, non-firm, and conditional firm transmission service to customers. These different levels of services provide power-producers with different rights of access to transmission capacity. Currently, these services are offered on a first-come, first-served basis, as opposed to being optimized for the expansion of renewable energy.

BPA also manages 13 internal network "flowgates, or constrained transmission pathways across the region. BPA employs both long- and short-term available transmission capacity methodologies to account for the different time horizons in transmission projects. BPA has separate processes for evaluating transmission service requests in the Short-Term (0-13 months) and the Long-Term (beyond 13 months). For example, the Short-Term considerations include changes in network pathways due to near-term equipment outages. The Long-Term planning considers projected load growth trends, resource retirements, and resource additions.

Jones further provided an overview of BPA's cluster study process through a combined system impact study and facilities study. Through clustering, participants receive cost-sharing options, more efficient sizing of upgrades, more efficient queue processing and response, and a higher project subscription to support the project business case and rate treatment. However, risks to clustering include fluctuation in cost allocation and long wait times for customers awaiting the next BPA cluster study. Overall, Jones commented that BPA studies and plans its transmission system in a manner that respects the existing long-term firm rights held by its transmission customers.

Following Jones' presentation, TCWG members and EFSEC staff raised questions including:

- In your judgement, is BPA's long-term planning process on track to meet the dramatic increases in renewable generation expected over the coming decade?
 - In response, Jones said BPA runs cluster studies to be in a position where BPA can take in new requests for service, provide responses, and continue to support new upgrades to the transmission system. This is the primary design driver for planning process.
 - Other more pro-active work going on in parallel includes work on clean energy policy scenario analysis that is required by Open Access Transmission Tariff (OATT).
- As we move farther down the pathway to implement CETA and move away from thermal generation, we are going to need to make sure we have transmission available. What is the process and timeline for securing upgrades?
 - Jones shared those timelines depend on scale, scope, and size of the project. Projects can range from 1 to 10+ years, with NEPA obligations extending the timeline of a project.
- Can unused firm transmission capacity rights be sold or "rented" if not used?

- Jones commented that firm transmission can be resold and re-purchased at a later date if needed.
- What type of customers prefer firm, conditional firm, or non-firm transmission service?
 - In response, Jones commented that firm transmission service is most requested in the long term by Investor-Owned Utilities (IOUs). This can be seen in RFP processes when IOUs are seeking new resources. IOUs want to minimize risk of curtailment.
 - Conditional and non-firm service generally used by power marketers in short term.
- What type of transmission service are most new wind and solar generators requesting?
 - Renewable energy generators by in large prefer long term service as it is often a requirement of RFPs and can enable financing of projects.
- What utilities are shifting to conditional firm in their RFPs?
 - Portland General Electric is using Conditional Firm a qualifier in a recent RFP.

In addition to this presentation, following the meeting, BPA provided a list of potential transmission planning upgrades that ensure expected performance will meet the requirements of applicable reliability standards for the TCWG's reference. [See Appendix B.](#)

Presentation #2: Sustainability Initiatives and ROW Policies

Ahmer Nizam, Technical Services Manager, and Justin Zweifel, Environmental Policy Manager introduced Washington State Department of Transportation (WSDOT)'s provided an overview of transportation rights-of-way considerations in the context of transmission co-siting as well as WSDOT's sustainability initiatives.

Table 1: Siting Requirements within Highway Rights of Way

Utility Facility: Crossing	Utility Facility: Longitudinal Installation	Other Facility Types
Permit RCW 47.44.050	Franchise RCW 47.44.010	Lease RCW 47.12.120
Cost is limited to recovery of expenditures by WSDOT	Cost is limited to recovery of expenditures by WSDOT	Requires charging fair market rent
Typically allowed FHWA approval typically not required	Requires variance approval FHWA approval required for Interstates	FHWA approval required for interstates

There are two state highway designations that have to do with property ownership and controlling access to the highways: limited access, where WSDOT maintains a stricter criteria for approval, and managed access, where placement considerations are less strict. One exception is managed access highways within city limits where cities have utility permitting authority. Primary factors involved in the decision-making process for siting facilities within WSDOT rights of ways include both safety and operations access requirements, as well as preservation considerations.

Following Nizam and Zweifel's presentation, TCWG members asked if WSDOT is tracking what other states are doing in regard to installation of underground high-voltage transmission lines along interstate highway right of ways. Nizam clarified that WSDOT works with the American Association of State Transportation but does not partner with individual states. Members further raised questions regarding what internal policies WSDOT has around working on tribal lands. Zweifel shared that WSDOT has an environmental manual, which covers treaty rights, permits needed, and operations with tribes. For further information, please see <https://wsdot.wa.gov/publications/manuals/fulltext/M31-11/530.pdf>.

Presentation #3: Challenges in Journeymen Linemen Workforce

Will Powers, a journeyman lineman and Business Representative with the International Brotherhood of Electrical Workers Union, spoke to the challenges in the aging workforce of journeymen linemen. Powers shared the current challenge in labor shortage due to high retirement rates and a lack of large-scale investment in infrastructure in the energy sector. With current requirements mandating four years of apprenticeships, in addition to classroom training, journeymen linemen entering the field are not replacing retiring workers at a fast enough rate. Powers further raised concerns of loosened standards of apprenticeships leading to increased fatalities and increased costs.

As electricity demand grows, the need for the workforce grows as well. Power commented that shifting from natural gas, as well as utilization of electric vehicles, will create a demand for infrastructure rebuilding of transmission lines, substations, overhead/underground structures, and transformers, further stressing the workforce. To address the lack of journeymen linemen, Powers suggested accelerating projects to allow the training of apprentices to build up the available labor pool and reduce labor costs.

Following Powers' presentation, TCWG members posed questions regarding whether sub-specialties within the field have acute labor shortages. After a four-year apprenticeship, journeymen can cover all specialties once certified, resulting in a shortage across the field. Creating sub-specialties reduces the ability to respond to natural disasters, storm events, and inhibit the mobility to operate anywhere in the country, allowing the workforce to travel to demand. Despite this mobility of construction, journeymen linemen shortages remain across the U.S. Participants further raised questions regarding workforce training differences across regions. Powers commented that although the industry is standardized, on-the-job training varies by region. Larger utilities commonly have individual apprenticeship programs utilizing construction. In addition, due to the high demand for training, apprenticeship ratios between trainees and journeymen linemen have been adjusted to the lowest acceptable level to ensure individuals are trained safely.

Facilitated Discussions on Challenges and Emerging Principles relative to Upgrading the Existing Transmission System

Prior to the meeting, participants were asked to partake in a Mural activity to share feedback on draft statements that the facilitation team prepared capturing presentation and discussions from previous TCWG meetings relative to background findings, challenges, and opportunities to upgrading the existing transmission system, and emerging principles regarding a) meeting near-term transmission needs and b) siting, permitting, and constructing transmission upgrades.

Willis invited TCWG members to engage in group discussion on topics shared during the session. Participant comments and key takeaways will be incorporated into a separate revised document of

emergent findings and principles for TCWG review. Highlights from discussion representing individual perspectives included:

Challenges and Opportunities

- Peak demands must be met reliably. Utilities with bulk electric system facilities are required to follow mandatory Federal Energy Regulatory (FERC) standards. The standards include performance and reliability requirements for expected peak loads.
 - In considering peak demands, smaller scale, dispatchable, clean power is an important consideration. Grid infrastructure must be built to accommodate peak demands due to increasing extreme weather events, but also must take advantage of renewable resources.
- Firm transmission contracts can result in unused transmission capacity on current system. Members suggested BPA and IOUs look closer at actual power flow modeling vs contract scheduling.
- In some situations, cross-mountain transmission lines were developed without Tribal consultation. Tribal perspectives must be considered in both transmission upgrades and new siting.
- Transmission planning mechanisms tend to be more specific to individual projects. There currently isn't a comprehensive overall planning mechanism for state of WA. The current piecemeal approach is a barrier to creating the structure needed to address a carbon reduction.
- While there are some current regional planning efforts, coordinating better with other states and regions would help with a transmission system buildout.
- Washington utilities favor firm transmission rights, which limits developers' ability to take advantage of other transmissions rights they could pursue. This can lead to unused (non-firm) transmission capacity available on lines. Members recommended that Washington utilities should explore solutions around transmission underutilization in integrated resource planning efforts.
- Using existing rights-of-way and permits to upgrade existing lines is challenging. To address challenges, members suggested:
 - Supporting electrical vehicle charging stations in interstate corridors with AC and DC lines.
 - Distinguishing between transmission rights-of-way and other transportation rights-of-way.
 - Exploring opportunities with underground AC or DC lines along highways.

Emerging Principles Group Discussion

Individual participant comments and takeaways included:

- Transmission is required for resources beyond renewables. Language should highlight clean resources.
- Load and resource diversity should take advantage of a broad system. There is a need to look beyond in-state obstacles and connect new resources to Washington to strengthen the transmission grid across the west. Building and maintaining a diverse portfolio helps to build a diversified energy reserve that could prevent widespread outages.
- Geographic diversity of resources helps smooth out the intermittent nature of renewables and can reduce the need for resources to be held in reserve for reliability purposes.
- Focus on transmission with higher capacity allows for additional room to grow.

- In addition to upgrading existing lines, members raised the importance of developing policy to make use of existing corridors.
- Storage is an important consideration as demand grows. The amount of energy storage available and the amount of transmission needed are related, with the amount of storage available impacting the utilization of transmission systems.

For additional and specific updates to emergent findings and principles language based on TCWG comments, see separate document circulated to the TCWG for review after Meeting #3.

Public Comment

Dani Madrone, Northwest Policy Manager with American Farmland Trust (AFT) elevated the importance of including agriculture and land use as a consideration in transmission planning. Providing information to the TCWG on opportunities, threats, and needs to land use planning would help to inform the process. Madrone further shared available AFT materials, including mapping data and research on land and water strategies as a resource for the TCWG members in their ongoing considerations.

Jim Thornton provided public comment requesting the TCWG members consider section 40105 in the Infrastructure Investment and Jobs Act. This section provides additional criteria for FERC to provide backstop authority over designation of National Interest Electric Transmission Corridors under Section 216 of the Federal Power Act. Thornton requested additional focus on the opportunity provided by increased renewable resources from British Columbia regarding transmission corridors.

Closing

Willis shared that the facilitation team would share meeting materials and revised emerging principles language following the session. Meeting sessions going forward will move to a two-day format, adjusting sessions one week forward. Willis further guided the TCWG members through the planned focus of Meeting #4, highlighting options for expediting environmental review (Outcome #3 in the TCWG Charter).

Kathleen Drew thanked participants for their time and for sharing their expertise, perspective, and viewpoints in the path towards developing meaningful recommendations to the Legislature.

APPENDIX A: MEMBERS/ALTERNATES IN ATTENDANCE

Affiliation	Member Name	Attendance
Department of Commerce	Glenn Blackmon	Y
UTC	Elizabeth O'Connell Joel Nightingale Ann Rendahl	N Y Y
Department of Ecology	Brendan McFarland Diane Butorac	Y Y
Department of Fish and Wildlife	Benjamin Blank	Y
Department of Natural Resources	Loren Torgerson	Y
Washington State Department of Transportation	Ahmer Nizam	Y
Department of Archaeology and Historic Preservation	Allyson Brooks	N
Military Department	Bernard (Rick) Jackson	Y
Association of WA Cities	Julie Coppock Clint Whitney	Y Y
Association of WA Counties	Kevin Shutty Lindsey Pollock	Y N
Public Utility Districts	Nicolas Garcia	Y
Sovereign Tribal Governments	Dana Miller Dawn Vyvyac Steven Mullen-Moses	N Y N
Affected utility industries	Lorna Luebbe Sarah Leverette	Y Y
Statewide environmental organizations	Erin Saylor Katie Ware	Y Y
Bonneville Power Administration	Anders Johnson	Y
Front and Centered	Mariel Thuraingham	Y
US. Department of Defense	Steve Chung Kim Peacher	N Y
International Brotherhood of Electrical Workers Union (Labor Rep)	Will Power	Y
Washington State Building and Construction Trades Council (Labor Rep)	Mark Riker	Y
Energy Project Developer	Anders Bisgard	N
Other	Rob Lothrop	Y

APPENDIX B: TRANSMISSION UPGRADE CATEGORIES

Following TCWG Meeting #3, Anders Johnson (BPA) provided a list of transmission upgrade categories that ensure expected performance will meet the requirements of applicable reliability standards. This list is shared for the work group's reference.

Transmission planners consider a variety of potential reinforcement options to ensure that expected performance will meet the requirements of applicable reliability standards, including NERC standards. This includes smaller scale enhancements within existing utility corridors up to larger scale additions of new lines and substations.

Options are evaluated on a case-by-case for technical feasibility. Some options won't work for a particular application. For example, upgrades that only increase thermal capacity are not likely to add usable capacity when the system is stability limited. Upgrades that only improve stability performance are not likely to add capacity when the system is limited by thermal overloads. Often, multiple measures must be combined to optimize performance.

The following options are used primarily to maximize the transfer capacity of existing corridors by a finite amount:

- Increase the current rating of one or more transmission lines
 - Increase the clearance between the conductors and ground.
 - Replace the conductor with a higher-rated conductor, assuming the towers can handle the weight.
- Change substation configurations
 - Add power transformers strengthen connections between voltage levels.
 - Add power circuit breakers to reduce severity of breaker failure outages.
- Add shunt reactive power compensation equipment at substations to improve voltage control and stability.
- Add series reactive compensation to modify the series reactance of transmission lines, making them appear electrically “shorter” or “longer” to improve network performance.
- Continuous power flow control devices (phase-shifting transformers, newer devices that use power electronics).
- Use Remedial Action Schemes (RAS) to prevent overloads and instability immediately after an unplanned outage
 - High speed generation tripping
 - High speed reactive power device control
 - RAS requires redundant telecommunications
- Enhanced operating procedures
 - Power flow-based congestion management (used on BPA Network)
 - Operating nomograms to manage simultaneous interactions
 - Ambient temperature-dependent limits
- Conditional Firm transmission service
- “Non-wires” measures, including managing power flows through agreements with generator operators and end users.
- Rebuild existing lines with higher-rated conductor, higher operating voltage, and/or a double circuit configuration.
- Build new substations to improve connectivity to existing lines
- In some cases, building new transmission lines is the best option